

Abstract of the Invention

An image stabilization apparatus and method for stabilizing the imaging of a high-performance optical system prone to imaging instabilities from thermal effects. Thermal instabilities within the lens, such as convection, can result in image placement errors in a high-performance optical system. The apparatus includes a heating element arranged on the upper surface of the optical system to provide heat to one or more gas-filled spaces in the optical system. An insulating blanket covers a portion of the optical system to uniformize the heating of the optical system and increase efficiency of the apparatus. The gas in the spaces is heated so that the warmer gases reside near the upper portion of the optical system, while the cooler gases reside near the lower portion of the optical system. This creates a stable thermal environment within the lens system, thereby stabilizing the imaging. Optionally, gas can be flowed over the lower surface to keep heat from heating the lower portion of the optical system.